

Customer No.: 31561
Docket No.:12468-US-PA
Application No.: 10/709,036

REMARKS

Present Status of the Application

Applicant appreciate that the Office Action considered claims 5-6 to be allowable.

The Office Action rejects claims 1-4 and 7 under 35 U.S.C. 103(a) as being unpatentable over Naumov et al. (U. S. Patent 6,875,950; hereinafter Naumov) in view of Girard et al. (U. S. Patent 6,146,813; hereinafter Girard). Claims 1-7 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of Claim Rejections under 35 USC 103

The Office Action rejects claims 1-4 and 7 under 35 U.S.C. 103(a) as being unpatentable over Naumov in view of Girard. Applicants respectfully traverse the rejections for at least the reasons set forth below.

The present invention is directed to a laser annealing on the amorphous silicon film into polysilicon film. The resistant-measurement module is used to measure a sheet resistance of the polysilicon thin film for obtaining a sheet resistance value, so that the host circuit module can adjust and optimize the laser energy density. The features are recited in independent claims 1 as follows:

1. A laser annealing apparatus, adapted to perform a laser annealing process for annealing an amorphous silicon thin film, comprising:
a laser-generating module, adapted to provide a laser beam to recrystallize the amorphous silicon thin film to form a polysilicon thin film;

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a resistance-measurement module, adapted to measure a sheet resistance of the polysilicon thin film for obtaining a sheet resistance value; and

a host circuit module, electrically coupled to and between the laser-generating module and the resistance-measurement module, the host circuit module, according to the sheet resistance value, outputting a feedback signal to the laser-generating module, for optimizing an energy density of the laser beam. (Emphasis added)

The features emphasized above are at least not disclosed by the prior art references.

In Re Naumov, clearly, the laser is used to trim the untrimmed elements on the panel 540 (FIG. 5; col. 14, lines 57-63). Therefore, Naumov does not disclose the *resistance-measurement module* of the present invention to measure the resistance of the trimming element.

Alternatively, the Naumov is nonanalogous to the present invention about laser annealing with adjusting laser energy density based on the measured resistance on the polysilicon film.

In addition, the Office Action has also noted that Naumov does not disclose the *resistance-measurement module* of the present invention. The Office Action then cites Girard about resistance measurement.

In re Girard, again, the laser is used to carbonization to form the shunt. The laser is operated just below the ablation threshold (col. 15, lines 1-2), *in which the laser energy of*

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Girard is at a fixed energy density. Even though the resistance is measured in Girard (col. 15, lines 12-14), this is the different mechanism from the present invention. The laser energy density is not adjusted according to the measured resistance.

Actually, Girard is to form the shunt structure. The shunt resistance is related to length of shunt and distance between conductors by " $R = \rho (L/WT)$ " (col. 11, lines 18-31). Therefore, it is understood that the resistance measurement is for checking whether or not the shunt resistance is achieved *but not for adjusting the laser energy density on the polysilicon* as recited in the present invention. Here, the sheet resist for the polysilicon film, considered in the invention, is varying with the degree being annealed from amorphous silicon into polysilicon.

Therefore, Girard fails to disclose the measurement on the sheet resistance of the polysilicon, so as to adjust the annealing laser energy.

Alternatively, Girard is nonanalogous to the present invention about laser annealing on the amorphous silicon into polysilicon. In other words, Naumov and Girard are nonanalogous to the present invention.

For at least the foregoing reasons, Applicants respectfully submit that independent claim 1 patently defines over the prior art references, and should be allowed. For at least the same reasons, dependent claims 2-7 patently define over the prior art references as well. Wherein, claims 5-6 have been considered to be allowable.

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 1-7 of the invention patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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